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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/005,669	11/02/2001	Jie Yang	57172US002	7579
32692	7590	09/13/2004		
3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427			EXAMINER MAKI, STEVEN D	
			ART UNIT	PAPER NUMBER

1733

DATE MAILED: 09/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/005,669

Applicant(s)

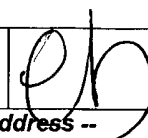
YANG ET AL.

Examiner

Steven D. Maki

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,7-22,42 and 43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,7-22,42 and 43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 072604.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7-6-04 has been entered.

2) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3) Claims 1-3, 7-22, 42 and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the scope and meaning of "polyacrylate component containing acrylic acid" is ambiguous. It is unclear if the claimed component is (1) a combination of polyacrylate and acrylic acid (polymer and monomer), (2) the polyacrylate is derived from acrylic acid or (3) the polyacrylate component has a reactive functional group wherein the reactive functional group is an acrylic acid group.

As to claims 42 and 43, the claimed optical element is ambiguous. In particular, it is unclear if the adhesive per se is the optical element. If no other layer is claimed and "optical element" in the preamble is thereby merely intended use, then it is unclear what additional limitation is being claimed. Alternatively, it is unclear if the optical element comprises two substrates bonded by the adhesive.

In claim 43, --at least one of-- should be deleted in view of the amendment of "and" to --or--.

4) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5) Claims 1-3, 7-15, 17-22 and 42-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Staral et al (US 5897727) in view of Japan '380 (JP 2-178380) and optionally Komiya et al (US 6319603).

Staral et al discloses a pressure sensitive adhesive comprising:

(1) at least one polymer obtained from the polymerization of at least one free-radically polymerizable monomer such as an acrylic based monomer ("**a polyacrylate component**");

(2) at least one cationically polymerizable monomer such as an epoxy monomer ("**an epoxy component**");

(3) a photo-activatable catalyst system for the cationically polymerizable monomer ("**a cationic initiator**")

wherein the pressure sensitive adhesive has the combined properties of a pressure sensitive adhesive and a strong, permanent, semi-structural or structural bond. See for example col. 8 lines 59-67, col. 9 lines 1-24, col. 10 lines 3-12, col. 11 line 49-col. 12 line 11, col. 12 line 12-48. The pressure sensitive adhesive can be used to prepare optically useful elements. See col. 1 lines 7-8. The pressure sensitive adhesive can be

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optically clear. See col. 6 lines 19-22. The pressure sensitive adhesive can crosslink to provide optical properties needed in optical elements. See col. 7 lines 58-60. The crosslinkable component (the epoxy component) imparts little optical haze to the adhesive (before or after curing) so that it may be used in optical systems. See col. 10 lines 9-12. Staral et al is silent as to the properties of luminous transmission being greater than 90%, the haze being less than 2%, and the opacity of the composition being less than 1%.

As to claims 1 and 2, it would have been obvious to provide the polyacrylate component, epoxy component and cationic initiator of Staral et al so as to have the claimed properties "wherein the uncured adhesive is optically clear such that the luminous transmission of the composition is greater than 90%, the haze of the composition is less than 2%, and the opacity of the composition is less than 1%, ... and wherein after aging the cured adhesive at 90oC (or 80oC) for 500 hours the luminous transmission of the cured and aged adhesive is greater than 90%, the haze of the cured and aged adhesive is less than 2%, and the opacity of the cured and aged adhesive is less than 1%" depending on the desired optical properties of the adhesive since Staral et al, directed to optical elements, teaches formulating the adhesive for preparing an optical element such that the adhesive is optically clear and has "little optical haze" before or after curing. Hence, Staral et al discloses a layer of pressure sensitive adhesive, which like the adhesive of claim 1, comprises a polyacrylate component, an epoxy component and a cationic initiator. Furthermore, Staral motivates one of ordinary skill in the art to provide the pressure sensitive adhesive with the claimed optical

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properties since Staral's teaches *using the pressure sensitive adhesive to bond an optical element*. Staral et al's teaching to use a crosslinkable component (i.e. the epoxy component) with the polyacrylate component such that "little haze" is imparted to the pressure sensitive adhesive before or after curing provide ample guidance as to *how* to obtain the claimed optical clarity.

As to the limitation of "wherein the uncured, curable adhesive can be cured to form an adhesive comprising an interpenetrating polymer network", note Staral et al's teaching that (1) the pressure sensitive adhesive comprises a polyacrylate component and an epoxy component and (2) the polymers of the crosslinked adhesive "will not separate into optically distorting phases" (col. 6 lines 19-23). Also, see the use of Japan '380, which is discussed below.

As to "polyacrylate component containing acrylic acid", it would have been obvious to one of ordinary skill in the art to provide Staral's polyacrylate component as a "polyacrylate component containing acrylic acid" in view of (1) Japan '380's teaching to provide a pressure sensitive adhesive, which like Staral's adhesive comprises a polyacrylate component and an epoxy component, such that the polyacrylate component is an acrylic resin having a functional group (e.g. (meth)acrylic acid) reactive with an epoxy group so that the adhesive has stabilized adhesive properties and keeps strong cohesion even at high temperatures and optionally (2) Komiya et al, also disclosing an adhesive comprising a poly(meth)acrylate polymer, an epoxy component and a cationic initiator, suggests forming the poly(meth)acrylate polymer with a functional group such that a grafting reaction between the poly(meth)acrylate polymer

and the epoxy component is obtained and so that the resulting adhesive undergoes the least change in characteristics when exposed to heat and light and maintains its transparency (col. 1 line 65 to col. 2 line 3, col. 3 lines 38-57). The use of a polyacrylate component which reacts with the epoxy component is applicable to Staral in view of Staral's disclosure at col. 13 lines 1-8.

As to the dependent claims: As to claim 3 (single phase), note that the pressure sensitive adhesive is a single composition. As to claim 7, Japan '380 suggests reacting the functional group of the acrylic resin with the epoxy. As to claims 8-9, see col. 12 lines 13-48. As to claim 10, see col. 11 line 49-col. 12 line 12. As to claims 11-12, see col. 13 line 52+. As to claim 13, see col. 16 line 28+. As to claim 14, see col. 14 line 61 to col. 15 line 7. As to claims 15 and 17-20, it would have been obvious to one of ordinary skill in the art to use a polyfunctional monomer such as epoxy acrylate or hexanediol diacrylate since Komiya et al suggests additionally using a polyfunctional monomer such as epoxy acrylate or hexanediol diacrylate in a pressure sensitive adhesive composition, which like Staral et al's adhesive comprises a polyacrylate component and an epoxy component. See col. 7 line 57 to col. 8 line 32. As to claim 15, "grafting agent" fails to define over the use of an additional monomer suggested by Komiya et al. As to claims 18-20, the subject matter of the "crosslinker" is hexanediol diacrylate fails to distinguish over the hexane diacrylate suggested by Komiya et al. As to claims 21-22, the claimed amount of epoxy would have been obvious and could be determined without undue experimentation in view of the above noted suggestion and guidance from the above applied prior art to formulate a pressure sensitive

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adhesive comprising a polyacrylate component and an epoxy component such that the pressure sensitive adhesive has the desired optical properties. As to claim 42, Staral et al teaches using the pressure sensitive adhesive to bond an optical element to another layer (optically transparent electrically conducting film). See col. 6 lines 4-8. As to claim 43, it would have been obvious to provide the pressure sensitive adhesive layer on a polycarbonate layer (an outgassing layer) since Staral et al teaches contacting the adhesive layer with a substrate (col. 6 lines 29-32) and (2) Staral et al's teaching that transparent substrates include polycarbonate substrates (col. 2 lines 23-36).

6) Claims 15-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Staral et al in view of Japan '380 and optionally Komiya et al as applied above and further in view of Everaerts et al (US 5905099) and/or Europe '494 (EP 729494).

As to claims 15-16 and 18-20, it would have been obvious to use a crosslinking agent such as 4-acryloxybenzophone or 1,6 hexanediol diacrylate in view of Everaerts and/or Europe '494's suggestion to use a crosslinker (e.g. 4-acryloxybenzophone or 1,6 hexanediol diacrylate) in an adhesive to improve strength. See col. 7 of Everaerts and page 5 of Europe '494. It is noted that (a) the adhesive in Everaert has high transparency upon application and after aging and (b) Europe '494's adhesive is a pressure sensitive adhesive.

Remarks

7) Applicant's arguments with respect to claims 1-3, 7-22 and 42-43 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 6-7-04 and entered via the RCE filed 7-6-04 have been fully considered but they are not persuasive.

As to applicant's arguments regarding "containing acrylic acid", note the new ground of rejection using the newly cited Japan 2-178380.

Applicant's argument that the acrylic acid acts as a reactive functional group to connect the polyacrylate to the epoxy component and create an interreacted interpolymer network is not commensurate in scope with any of the claims and is therefore not persuasive since none of the claims require this subject matter.

Applicant's argument that Staral fails to suggest using the composition for bonding materials that outgas or to bond an outgassing material to a material that has a low moisture vapor transmission rate is not commensurate in scope with any of the claims and is therefore not persuasive since none of the claims require this subject matter.

Applicant argues that Staral fails to teach how to make an adhesive that has optical clarity and provides no indication that its adhesives are optically clear after aging at 90°C for 500 hours. More properly, Staral et al discloses how to formulate a pressure sensitive adhesive system that can be optically clear (col. 6 lines 19-22) and teaches that the adhesive system imparts little haze to the adhesive after curing so that it may be used in optical systems (col. 10 lines 9-12).

No unexpected results over Staral have been shown.

8) No claim is allowed.

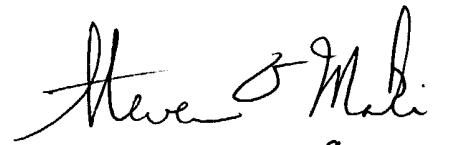
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9) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven D. Maki
September 9, 2004


STEVEN D. MAKI
PRIMARY EXAMINER
~~GROUP 1300~~
Av 1733 9-9-04